IBM Software Topics and Systems Integration

INPUT

Presented To:

TAKESHI SAITO
RESEARCHER

Hitachi Research Institute
6, KANDA-SURUGADAI 4 CHOME,
CHIYODA-KU, TOKYO 101, JAPAN
TEL. TOKYO (03) 258-1111

HIROKI SUETSUGU
RESEARCHER

Hitachi Research Institute
6, KANDA-SURUGADAI 4 CHOME,
CHIYODA-KU, TOKYO 101, JAPAN
TEL. TOKYO (03) 258-1111
FAX: TOKYO (03) 258-2375
TELEX: J22395 HITACHY

IBM Software Topics
and
Systems Integration

Presented to: Hitachi Research Institute

By: Michael Cohn, MAPS Program Manager
and
Dennis White, Director, Custom Research

June 23, 1988

Published by
INPUT
1280 Villa Street
Mountain View, CA 94041-1194
U.S.A.

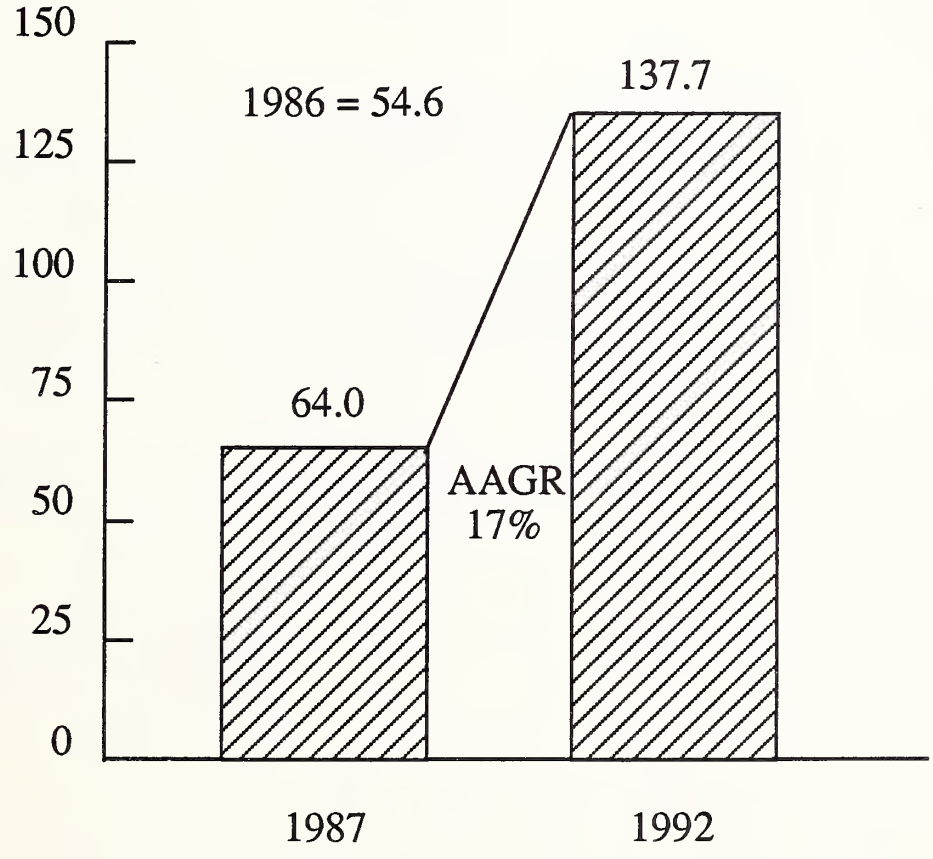
IBM Software Topics and Systems Integration

Systems Integration Characteristics and Structure

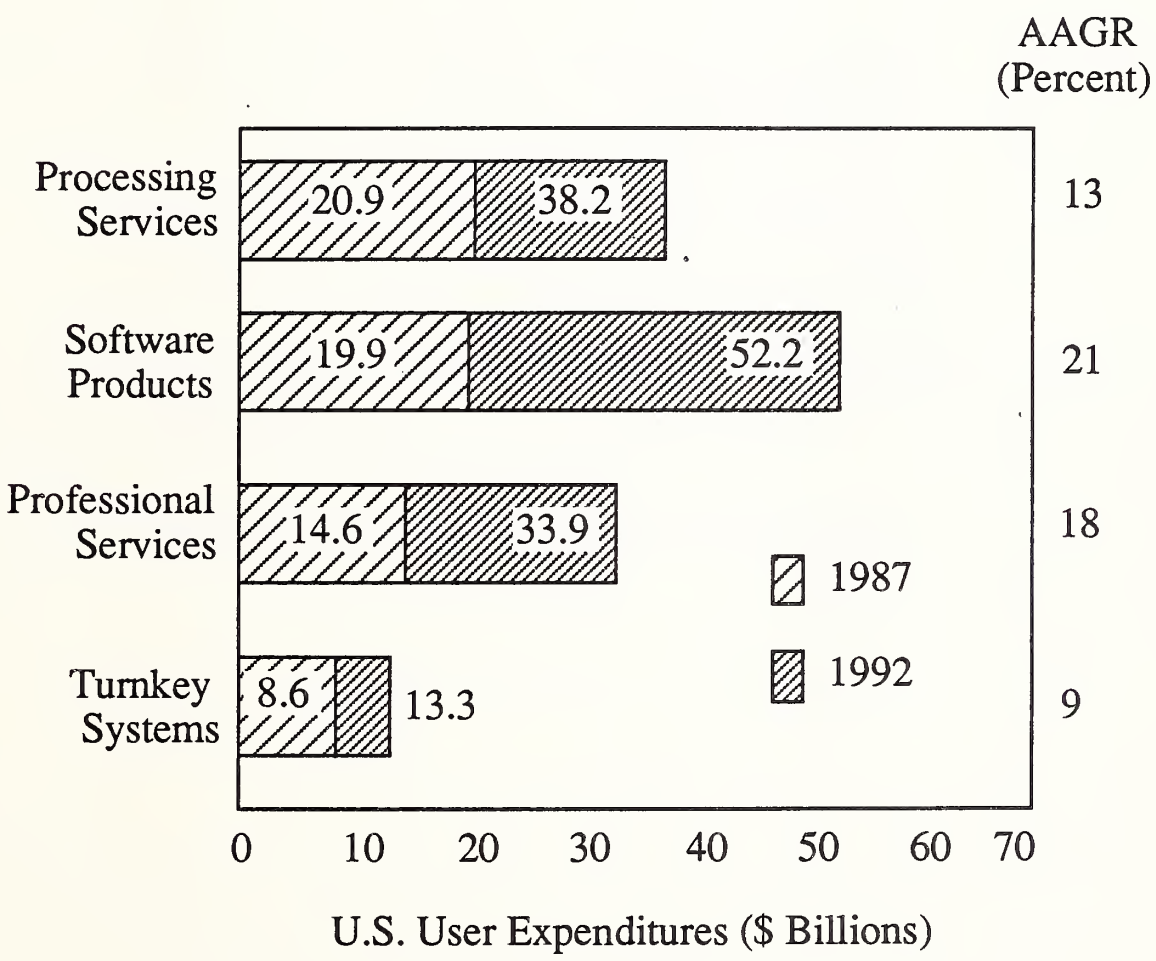
Presentation to:
Hitachi Research Institute

Dennis White
Director, Custom Research
INPUT

INFORMATION SERVICES MARKET
($ Billions)



INFORMATION SERVICES INDUSTRY BY DELIVERY MODE



MACRO ISSUES— INFORMATION SERVICES

- Focusing on End-User Needs (Vertical)
- Complexity Begets Customization
- Implementation Skill Mix Shortfall Begets Professional Services Boom
- Competitive Advantage Fuels Systems Integration
- Alliance Selection and Formation

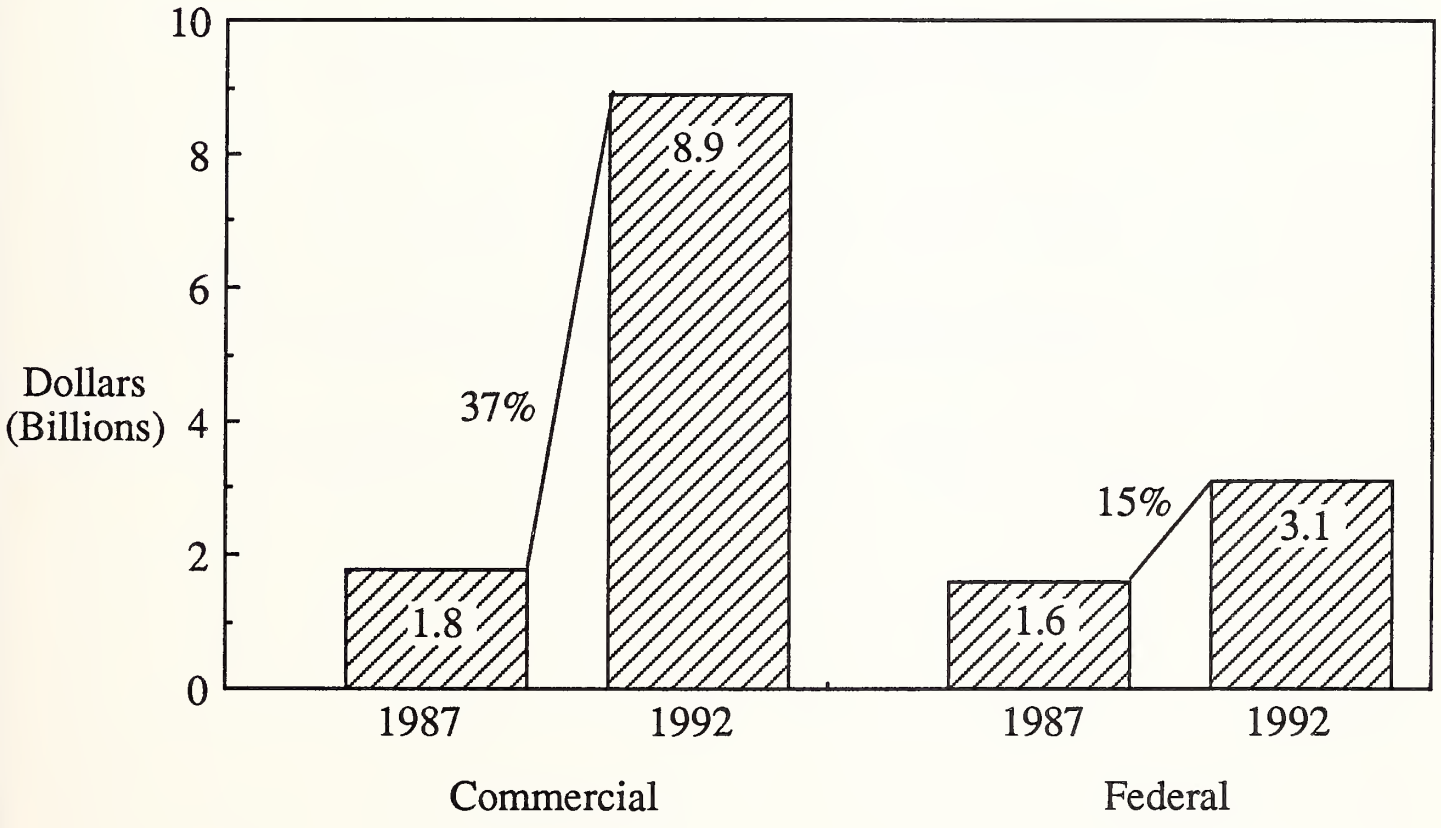
COMPETITIVE ENVIRONMENT

- Consolidation
- Increasing Overlap
- 'Power Player' Game
  - New Entrants
- Positioning/Control

SYSTEMS INTEGRATION

"The Provision of a Total Solution to a Multidisciplinary Information Systems Requirement"

SYSTEMS INTEGRATION EXPENDITURES FORECAST



SYSTEMS INTEGRATION
CUSTOMER REQUIREMENTS

- Single-Source Solution/Accountability
- Rapid and Cost-Effective Implementation
- Applicable Range of Technical Skills
- Reputation—Credibility—Experience

SYSTEMS INTEGRATION
GLOBAL CHARACTERISTICS

- Total Information Systems Solution of Design to Implementation
- Single-Source Control with Significant Program Management Responsibility
- Single-Source Accountability
- Application of Complex and Multidisciplinary Tasks

SYSTEMS INTEGRATION TASKS/SERVICES

- Overall Project Design
- Hardware/Software Selection
- Network Analysis
- Integration Responsibility

PRODUCTS/SERVICES IN SYSTEMS INTEGRATION PROJECTS

- Equipment
  - Information Systems
  - Communications
- Software Products
  - Systems Software
  - Applications Software

PRODUCTS/SERVICES IN SYSTEMS INTEGRATION PROJECTS

- Professional Services
  - Consulting
    - ° Feasibility and Tradeoff Studies
    - ° Selection of Hardware, Network, and Software
  - Project Management

PRODUCTS/SERVICES IN SYSTEMS INTEGRATION PROJECTS

- Design/Integration
  - Systems Design
  - Installation of Hardware, Network, and Software
  - Demonstration and Testing

PRODUCTS/SERVICES IN SYSTEMS INTEGRATION PROJECTS

- Software Development
  - Modification of Software Packages
  - Modification of Existing Software
  - Custom Development of Software
- Education/Training and Documentation
- Operation and Maintenance (During Contract)

PRODUCTS/SERVICES IN SYSTEMS INTEGRATION PROJECTS

- Other Products/Services
  - Data Processing Supplies
  - Processing/Network Services
  - Data/Voice Communication Services
  - Engineering Services
  - Other

SYSTEMS INTEGRATION EXTENSIONS

- Operations and Maintenance
  - Equipment/Network Maintenance
  - Software Maintenance
  - Education and Training
  - Network Management

SYSTEMS INTEGRATION EXTENSIONS

- Systems Operations
  - Replaces Facilities Management
  - 'Ownership' with Customer
  - Not-Shared Operations
  - Transient Possibility

'EMBEDDED' SYSTEMS

- Part of Construction Projects
  - Factories/Plants
  - Warehouses
  - Transportation Facilities

COMMERCIAL VERSUS FEDERAL SYSTEMS INTEGRATION CHARACTERISTICS

Characteristics	Commercial	Federal
Vendors		
Vertical Expertise	Preferred	Mandatory
Customer Base	Leveragable	Reference
Conceptual Strength	Required	Optional
Reputation	Media-Based	Historic

COMMERCIAL VERSUS FEDERAL SYSTEMS INTEGRATION CHARACTERISTICS

Characteristics	Commercial	Federal
Business Conditions		
Competitive Bids	Optional	Required
Bid Complexity	Variable	High
Expenditure Commitment	Deferrable	"Guaranteed"
Risk Exposure	High	Contained
Contract Type	Fixed-Price	Combination
Price Restrictions	Competitive	Ceilings
Bonuses	Unlikely	Awd./Incent.
Penalties	Unlikely	Exception

FORCES IN SELECTING A SYSTEMS INTEGRATION APPROACH

- Expertise Is Limited or Experiences Negative
- Single-Source Solution Is Preferred
- Vendor "Partners" Are Desired
- Solution Is Not Preconceived
- Consultant Recommends It

SYSTEMS INTEGRATION VENDOR FOCUS

- Present a Full-Service Image
- Leverage and Promote Proprietary Technology
- Establish Strategic Partnerships (Alliances)
- Initiate and Maintain Overall Account Control

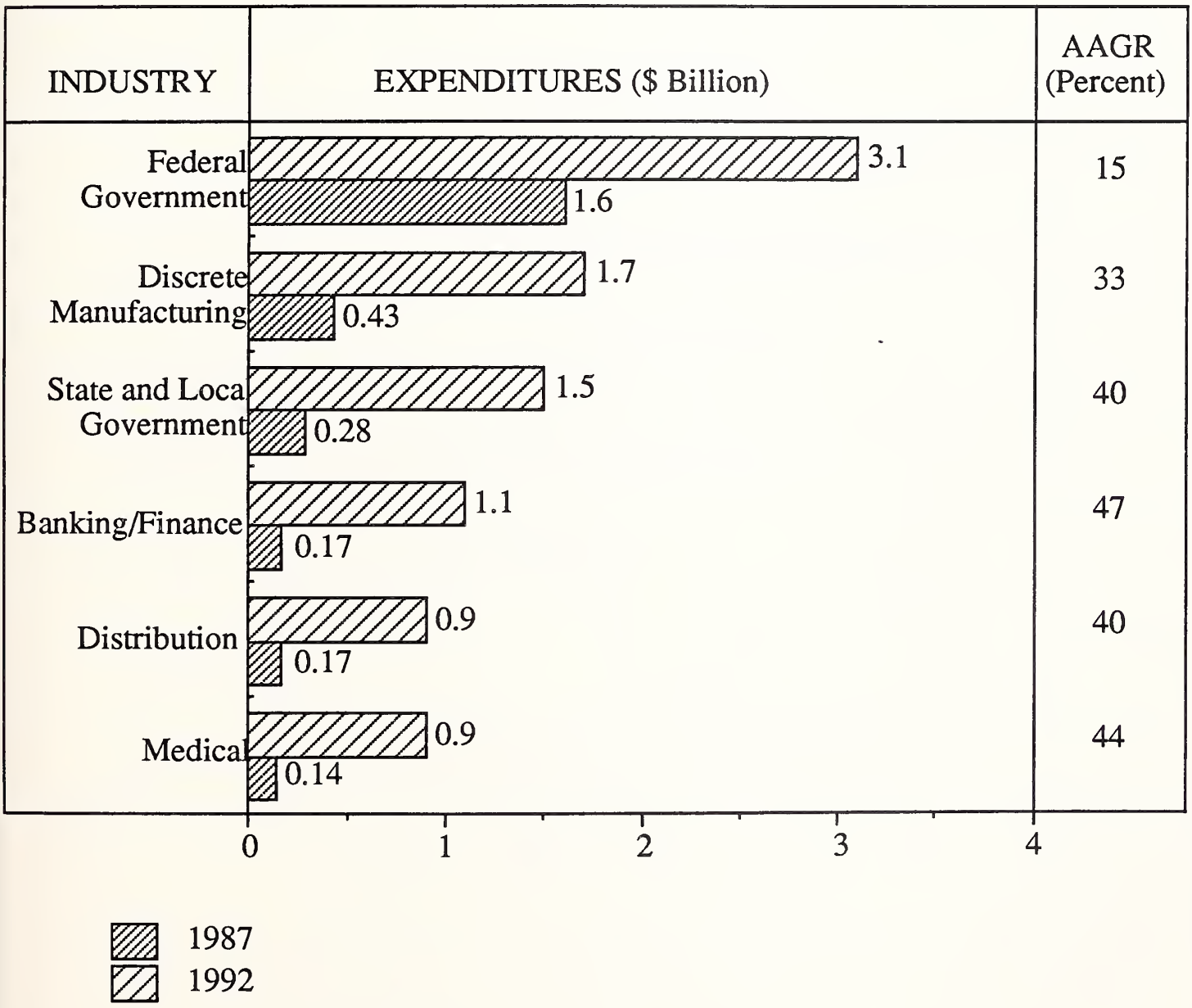
SYSTEMS INTEGRATION VENDOR CHARACTERISTICS

- Large, Fiscally Responsible
- Technologically Advanced
- Innovative
- Network-Based
- Operational Capability

CSI VENDOR SELECTION CRITERIA

FACTOR	WEIGHT (Percent)
Technical Credibility of the Solution	40
Risk Avoidance	
- Experience/Capabilities	30
- Project Management Approach	10
Cost	20
Service Orientation	Not Scored

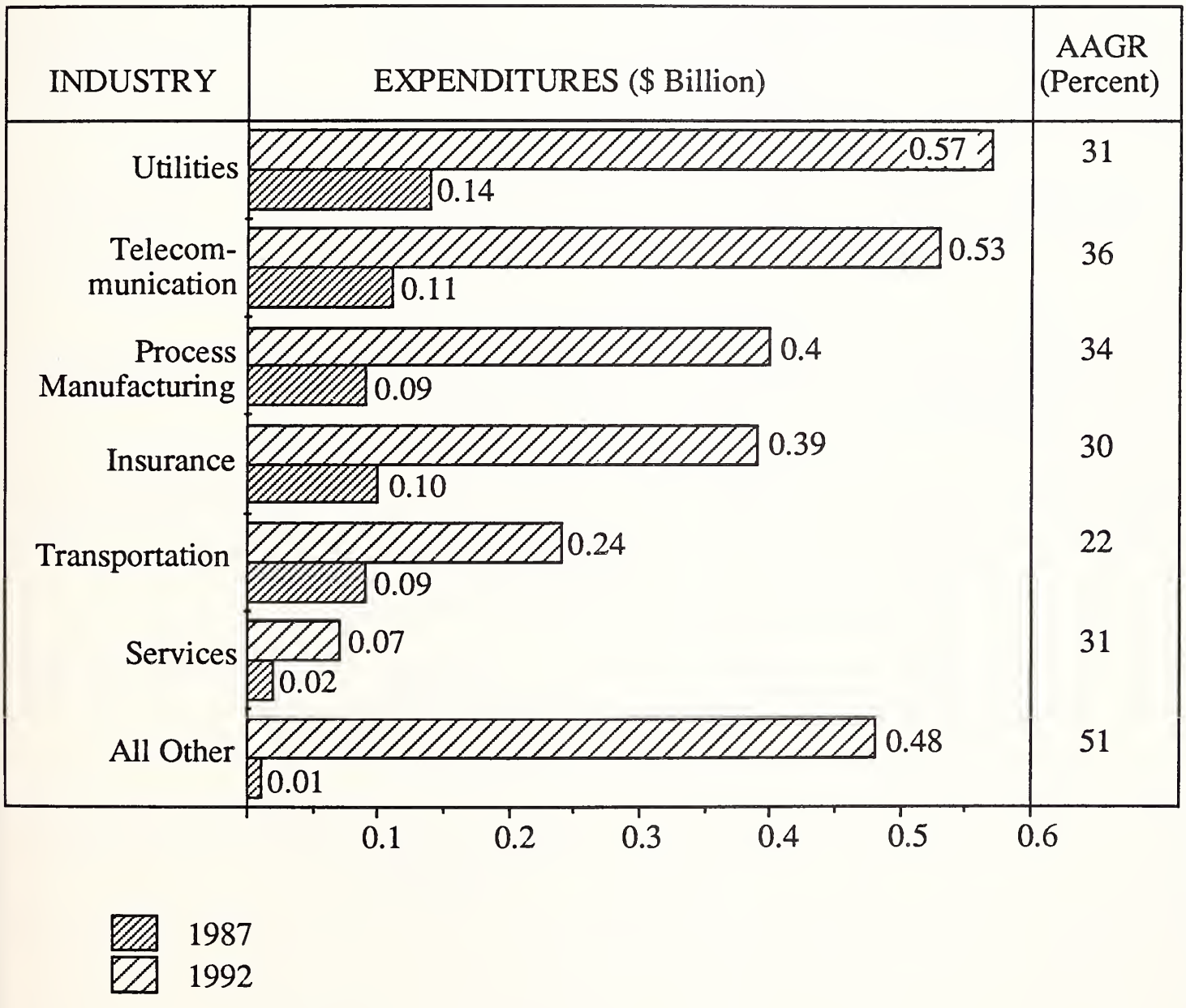
EXPENDITURES BY INDUSTRY
1987 - 1992



INPUT

ZQAD-DW-25

EXPENDITURES BY INDUSTRY
1987 - 1992



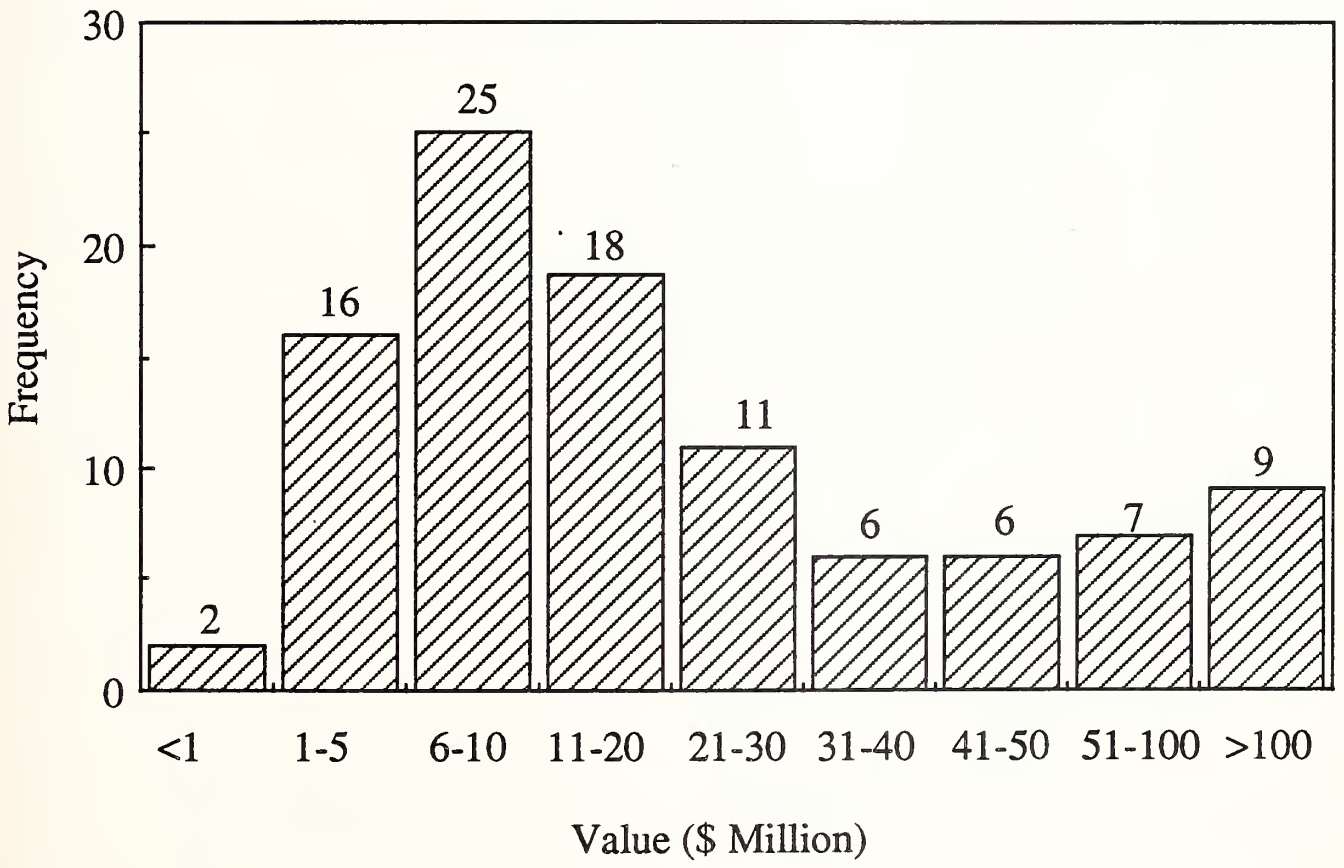
COMMERCIAL PROJECT EXAMPLES

Customer	Project	Value ($M)	Vendor
GE Flight Systems	Warehouse of Future	7.5	Harnischfager
Michigan State	Student Info Systems	10.0	Coopers & Lybrand
USS/POSSCO	Data Center Consolidation	25.0	Computer Task Group
Major Oil Co.	DBMS Installation	10.0	Arthur Andersen
Major N.Y. Bank	Bank System Upgrade	25.0	IBM

FEDERAL CONTRACT EXAMPLES

Customer	Project	Value ($M)	Vendor
NASA	Technical Management Info System	330.7	Boeing
Air Force	Command Center Processing and Display Sys.	59.0	TRW
Navy	Naval Oceanography Data Distribution Sys.	1.2	Pending
Interior	Auto. Land and Mineral Record System	89.4	Pending
Treasury	Financial Operating System Integrity	34.6	Pending

DISTRIBUTION OF PROJECTS BY VALUE



SYSTEMS INTEGRATION
MARKET SHARE, 1987

Vendor	Market Share	
	Revenue($M)	Percent
IBM	515	15
EDS	450	13
AA + Co.	265	8
CSC	195	6
CDC	133	4
Unisys	95	3
Total Leading Vendors	1,653	49

Total Mkt = $3,400 Million

COMMERCIAL SI
MARKET SHARE, 1987

Vendor	Market Share	
	Revenue($M)	Percent
IBM	375	21
AA + Co.	225	13
EDS	130	7
Control Data	108	6
Total Leading Vendors	838	47

Total Mkt = $ 1,800 Million

FEDERAL SI
MARKET SHARE, 1987

Vendor	Market Share	
	Revenue($M)	Percent
EDS	320	20
CSC	185	12
IBM	140	9
MMDS	80	5
BCS	60	4
Total Leading Vendors	785	50

Total Mkt = 1,600 Million

RISING COMPETITION

CTG

Systemhouse

AT & T

AMS

Wang

Cincinnati Bell

AGS

Digital

Nontraditionals:
Baxter & Travenol,
Harnischfager,
Bechtel

TRENDS TO WATCH

- External Contracting
  - More/Less
  - Captive SI Organization
  - In-House Control
- SI DIS.Integration
- Preferred Solutions
  - Unique, Custom
  - Custom TurnKey

SYSTEMS INTEGRATION CHARACTERISTICS (FUTURE)

- Leading Edge Process Knowledge/Innovation
- Network Integration
- International Scope

CONCLUSIONS

- Overall 'Out-Sourcing' Will Expand
- Movement to 'Responsibility' Will Continue
- Systems Integration Will Be a Volatile Battleground

CSI VENDOR PROFILE: IBM

World's Largest Computer and Related Services Supplier

Marketing Strength > Technical Leadership

Broad Product Line

Targets All Vertical Markets

IBM COMPETITIVE POSITION

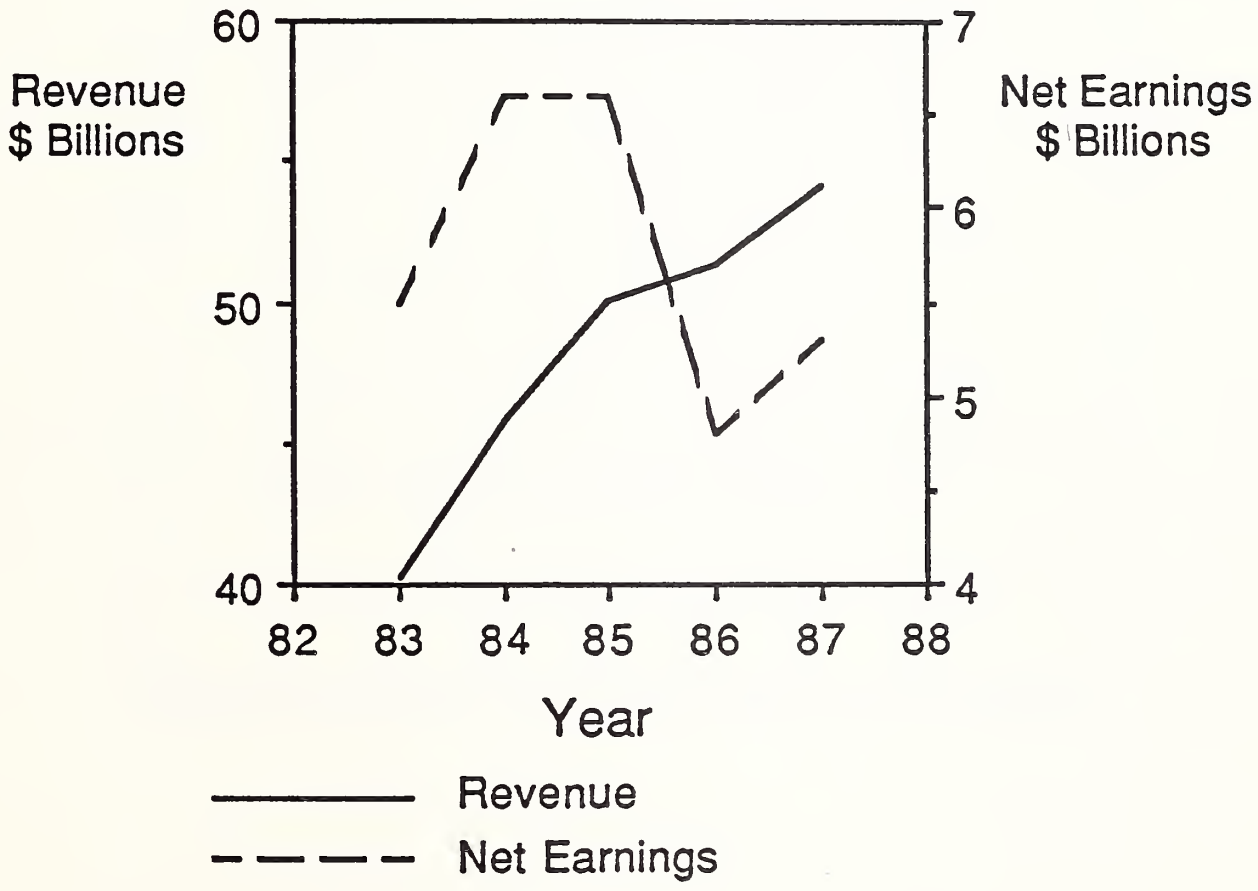
Strengths:

- Market Share/Installed Base
- Resource Access
- Long-Term Account Relationships
- On-Site Presence

Weaknesses:

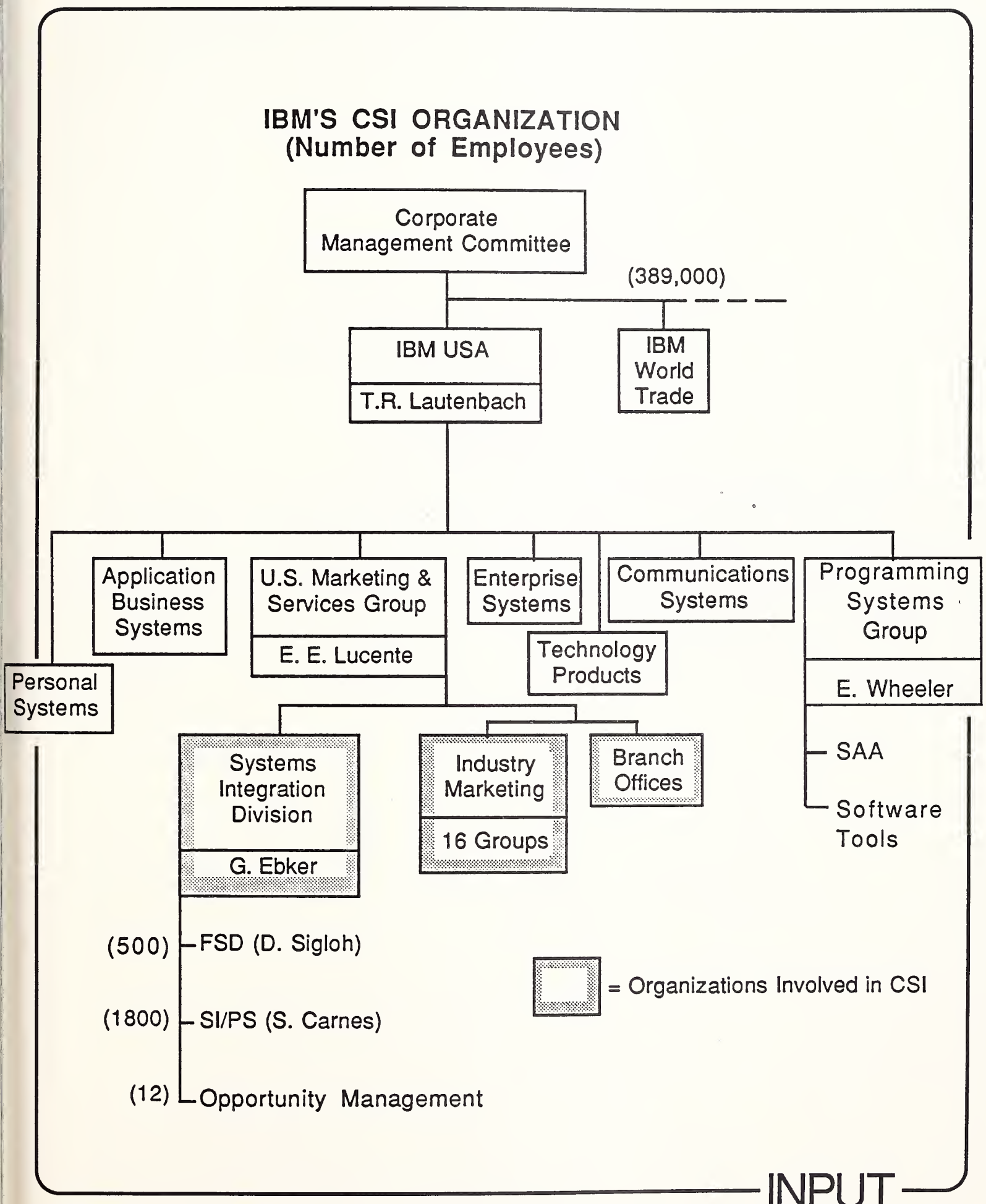
- Response to Market Needs
- Internal Bureaucracy
- Major Markets Slowing Down
- Focused Competitors
- Product Orientation v. Solutions
- Lack of Product Integration

IBM FINANCIAL SUMMARY

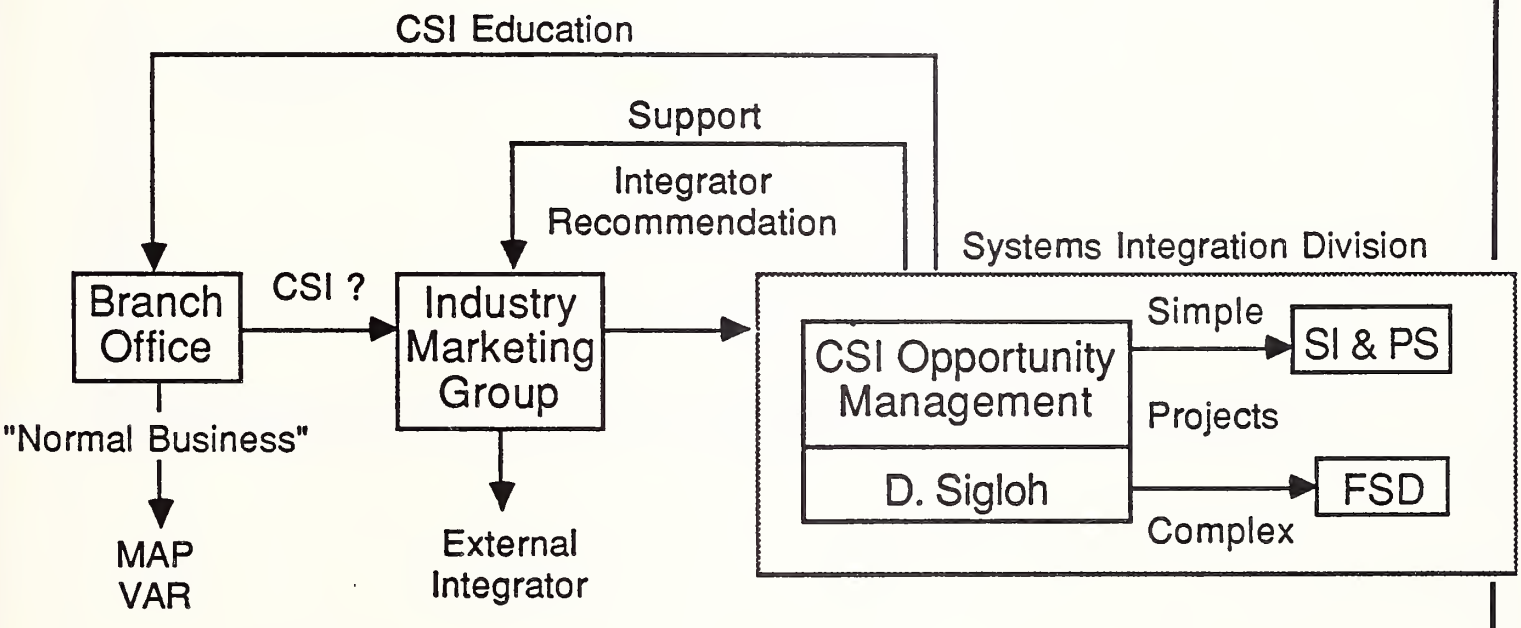


IBM RESPONSE

- Strategy Emphasis on Software and Communications/Connectivity
- Streamline Operations
- Strengthen Product Line
- Strategic Alliances
- Decentralize Decision Making
- Massive Organizational Restructuring


IBM'S CSI ORGANIZATION
(Number of Employees)
Corporate Management Committee
(389,000)
IBM USA
T.R. Lautenbach
IBM World Trade
Application Business Systems
U.S. Marketing & Services Group
E. E. Lucente
Enterprise Systems
Communications Systems
Technology Products
Programming Systems Group
E. Wheeler
Personal Systems
Systems Integration Division
G. Ebker
Industry Marketing
16 Groups
Branch Offices
SAA
Software Tools
(500) FSD (D. Sigloh)
(1800) SI/PS (S. Carnes)
(12) Opportunity Management
= Organizations Involved in CSI
INPUT

CSI OPPORTUNITY FLOW



IBM CSI OBJECTIVES

IBM Response: "Become a Leader in CSI"

INPUT's View:

- Account Control
- Product Distribution Channel
- "Bridge" to Software and Service Era
- Replicate Complex Solutions

ADDITIONAL IBM CSI ANALYSES POSSIBLE

1. Internal Capabilities Evaluation
2. Strategic Alliances
3. CSI Motivated Acquisitions
4. Capabilities Evaluation Versus CSI Competitors
5. Marketing Strategy
6. Pricing Guidelines
7. Customer Base
8. CSI Strengths and Vulnerabilities

IBM SOFTWARE PRODUCTS ACTIVITIES/STRATEGIES

- Systems Application Architecture
- Lines of Business
  - Applications Solutions
  - Programming Systems
- Application System Division (ASD)
- IBM Business Partners

IBM CORPORATE FINANCIALS
REVENUE GROWTH

SOURCE	(Percent)				
	1983	1984	1985	1986	1987
Sales	38.4	27.8	15.6	(0.6)	5.8
Services	19.4	25.1	20.1	28.0	14.3
Rentals	(17.0)	(28.7)	(37.4)	(25.5)	(20.7)
Total Revenue	16.9	14.3	9.0	2.4	5.8

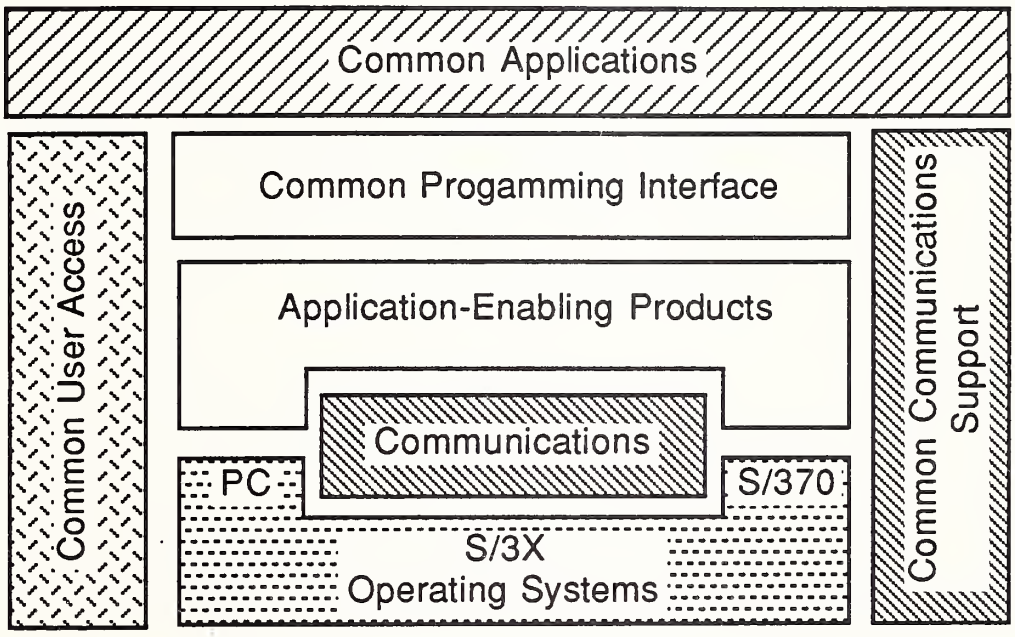
Net of Currency Gains for 1987: (1.0)

IBM CORPORATE FINANCIALS
GROSS PROFIT GROWTH

SOURCE	(Percent)				
	1983	1984	1985	1986	1987
Sales	33.5	28.5	12.2	(7.3)	5.2
Services	23.3	26.1	30.2	28.7	9.3
Rentals	(15.0)	(28.1)	(40.3)	(29.1)	(31.0)
Gross Profit	15.0	13.6	7.2	(1.4)	3.7

Net of Currency Gains for 1987: 1.6

SAA—WHAT IS IT?



SAA—COMMON PROGRAMMING INTERFACE LANGUAGES

Programming Languages:

COBOL
FORTRAN
C

Application Generator:

Cross System Product (CSP)

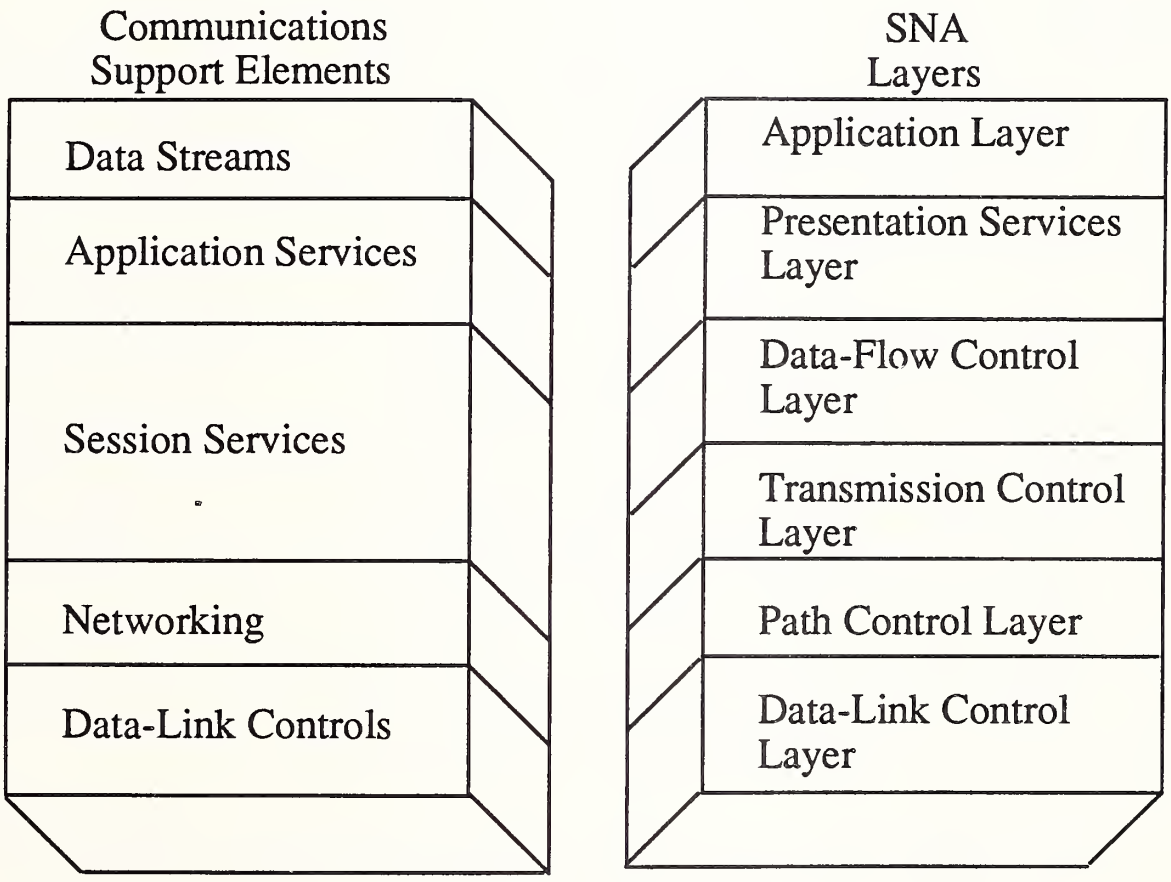
Procedures Language:

Restructured Extender Executor (REXX)

SAA COMMON USER ACCESS— BASIC ELEMENTS

- Machine → User
- User → Machine
- User Awareness

SAA COMMON COMMUNICATIONS SUPPORT SIMILARITIES TO SNA



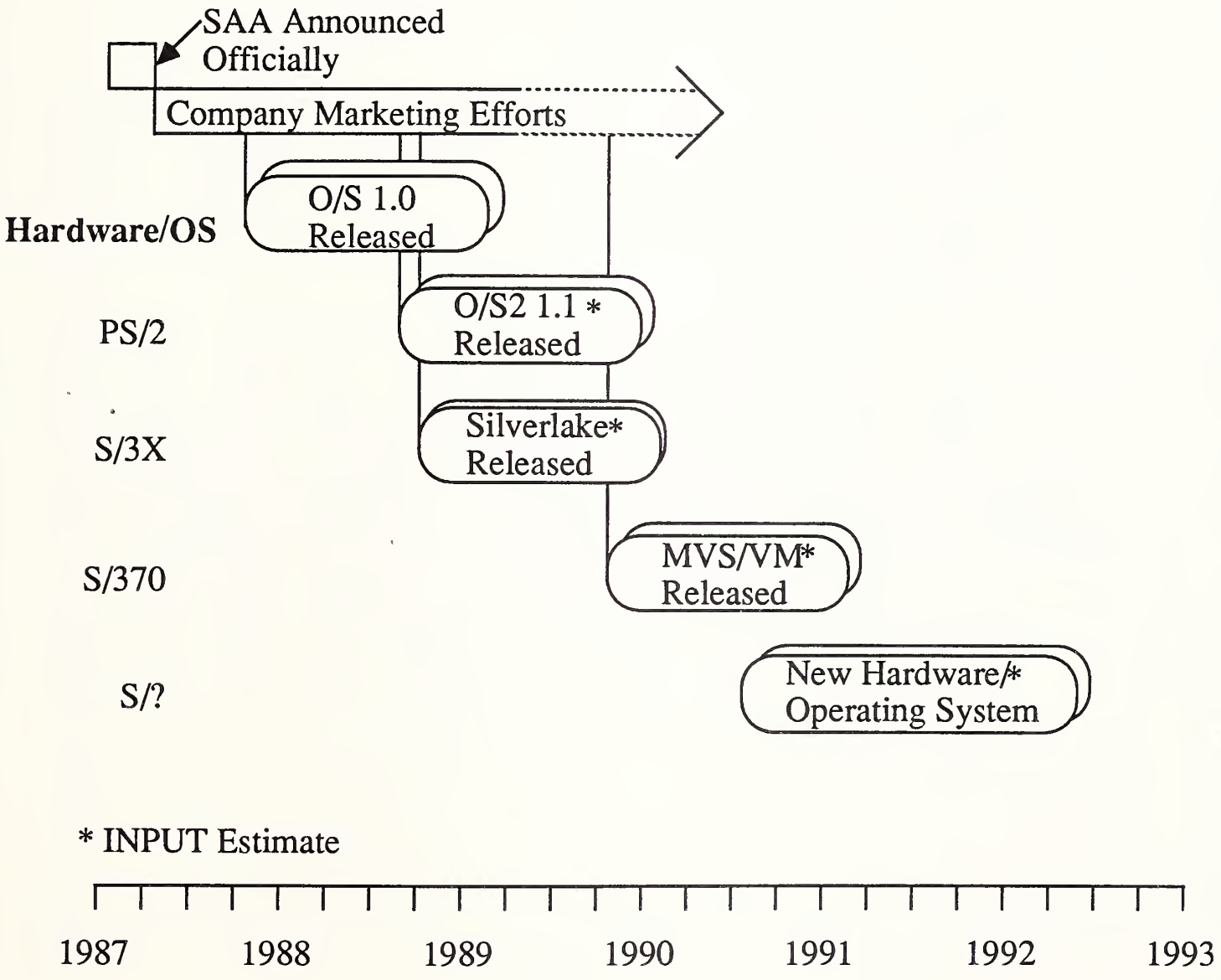
SAA PRODUCTS
COMMON COMMUNICATIONS INTERFACES

	MVS/XA	VM/CMS	OS/2	S/3X Silverlake
Data Streams:				
3270 Data Stream	TSO/GDDM	CMS/GDDM	PC 3270	c
IPDS Printer Data Stream	PSF	PSF	c	c
Document Content Architecture	DW/370	DW/370	DW 4/2	c
Application Services:				
SWADS Distribution	DISOSS	c	c	c
Document Interchange	DISOSS, PS/370	c	PS/PC	c
Network Management Architecture	NETVIEW	NETVIEW	OS/2 1.1E	c
Session Services:				
APPC LU6.2	ACF/VTAM 3.2	ACF/VTAM 3.2	OS/2 1.1E	c
Networking:				
LEN Low-Entry	ACF/VTAM 3.2-NCP	ACF/VTAM 3.2-NCP	c	c
Data Link Control:				
Synchronous Data Link Control	ACF/VTAM-NCP	ACF/VTAM-NCP	OS/2 1.1E	c
Token-Ring Network	ACF/VTAM-NCP	ACF/VTAM-NCP	OS/2 1.1E	c
X.25	ACF/VTAM-NCP-NPSI	ACF/VTAM-NCP-NPSI	OS/2 1.1E	c

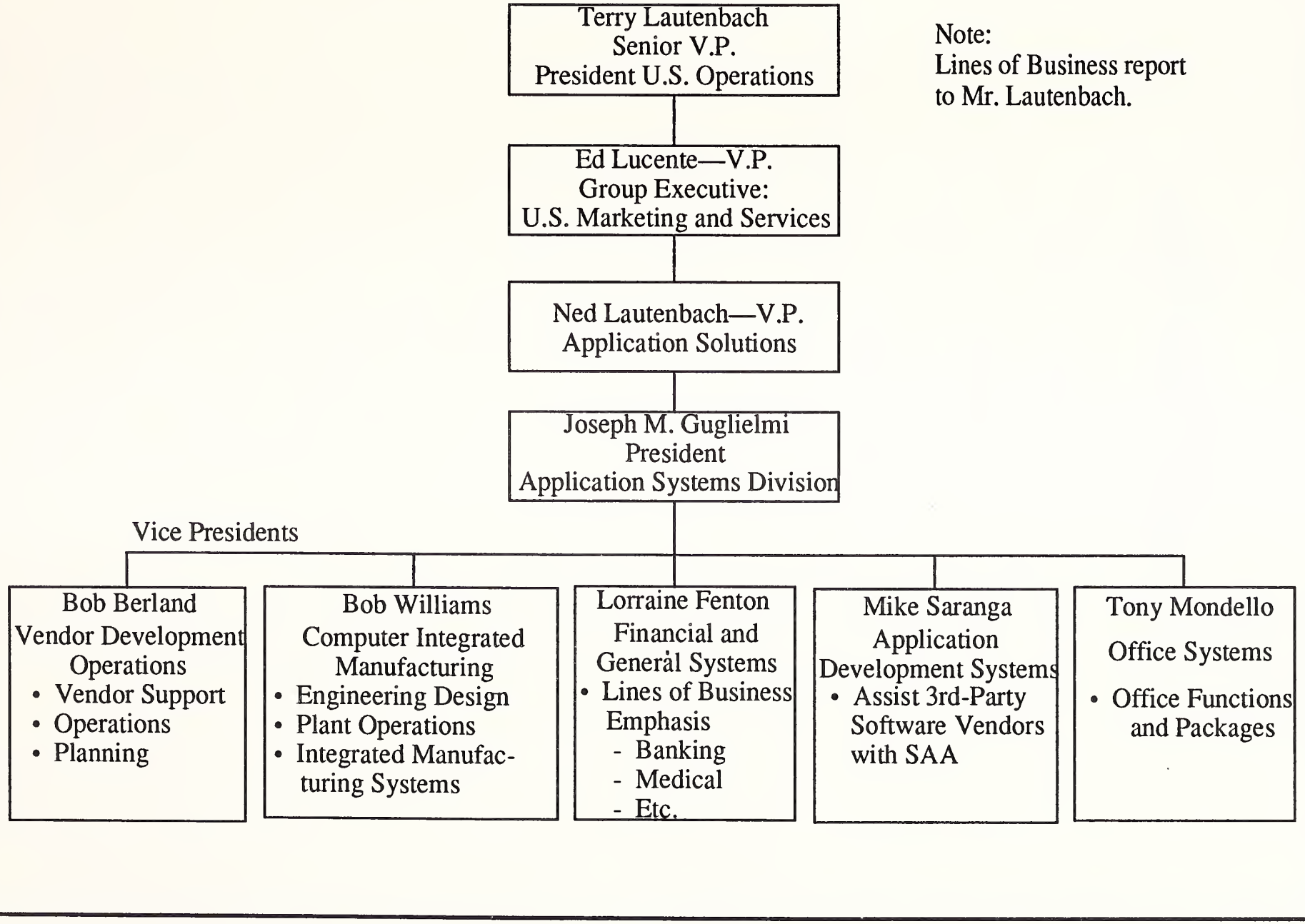
SAA PRODUCTS
COMMON PROGRAMMING INTERFACES

	MVS/XA	VM/CMS	OS/2	S/3X Silverlake
Languages:				
COBOL '85	COBOL II	COBOL II	COBOL/2	c
Fortran '77	VS Fortran	VS Fortran	Fortran/2	c
C	C	C	C/2	c
Applications Generator	CSP/AD, CSP/AE	CSP/AD, CSP/AE	EZ-RUN	c
Procedures Language	c	VM/SP (REXX)	c	c
Services:				
Data Base Interface (SQL)	DB2	SQL/DS	OS/2 1.1E	c
Query Management Interface	QMF	QMF	OS/2 1.1E	c
Dialog Interface	ISPF	ISPF	OS/2 1.05	c
Presentation Interface	GDDM	GDDM	OS/2 1.15	c

SAA—WHEN?


SAA Announced Officially
Company Marketing Efforts
Hardware/OS
O/S 1.0 Released
PS/2
O/S2 1.1 * Released
S/3X
Silverlake* Released
S/370
MVS/VM* Released
S/?
New Hardware/* Operating System
* INPUT Estimate
1987
1988
1989
1990
1991
1992
1993

ASD ORGANIZATION AND REPORTING LINES



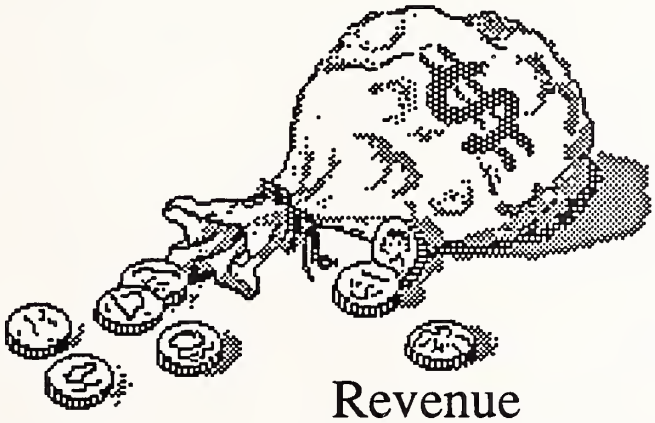
Note:
Lines of Business report to Mr. Lautenbach.

SAA FUTURES
INPUT FORECASTS

- UNIX
- CASE
- DDBMS

IBM SOFTWARE PRODUCTS SUMMARY:

- Partners, Partners, Partners



Revenue
Profits

Happy
Users

- Applications Solutions